

Uber Supply and Demand gap case study

Presented by

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Abstract

Problem statement:

- Driver cancellation and non-availability of cars leading to loss of potential revenue.

Goal of Data analysis:

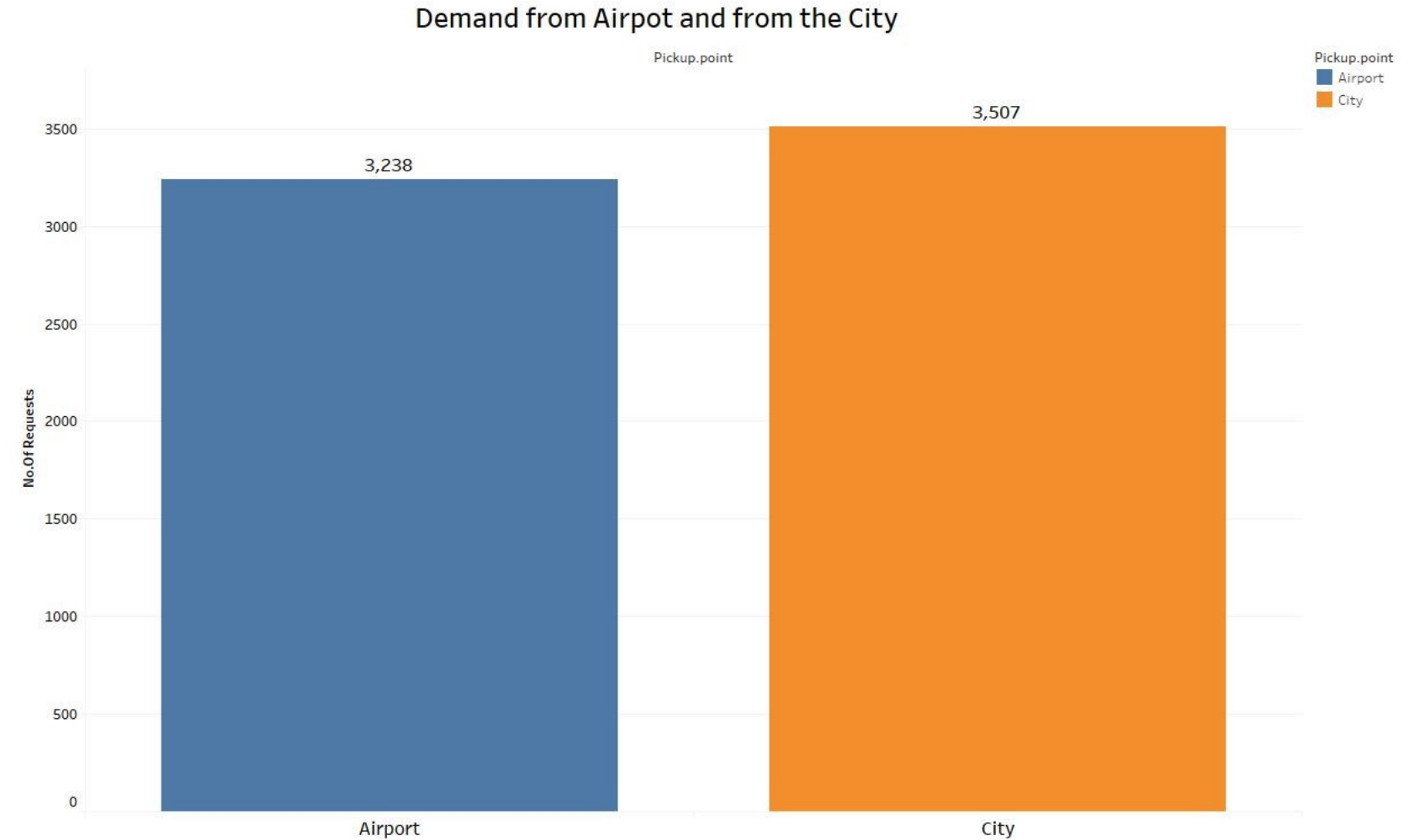
- Find out the gap between supply and demand
- Find the time slots where the highest gap exists
- Find the types of requests (city-airport or airport-city) for which the gap is the most severe in the identified time slot

Data Understanding:

- Request id: A unique identifier of the request
- Time of request: The date and time at which the customer made the trip request
- Drop-off time: The drop-off date and time, in case the trip was completed
- Pick-up point: The point from which the request was made
- Driver id: The unique identification number of the driver
- Status of the request: The final status of the trip, that can be either completed, cancelled by the driver or no cars available

Univariate Analysis of Pickup Point

□ The total number of requests that were made from **City** to Airport and from **Airport** to City are almost the same. So there is equal demand for the cabs at the Airport and City.

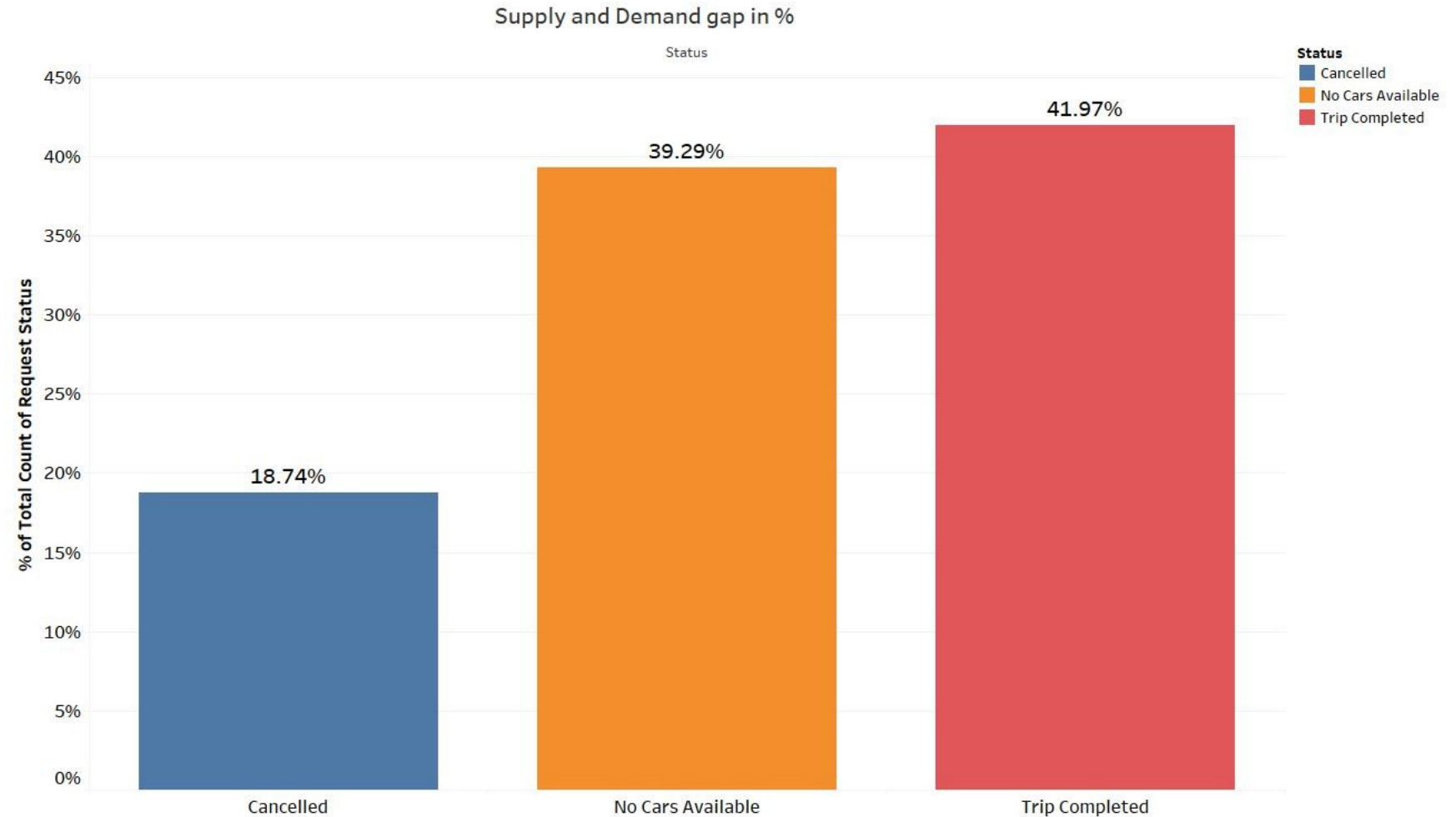


Count of Request.id for each Pickup.point. Color shows details about Pickup.point. The marks are labeled by count of Request.id.

Univariate Analysis of Request Status

❑ From the graph it is very clear that there is a huge gap in the supply and demand ratio, which is a big concern for Uber.

❑ Only **42%** of the total cab requests were fulfilled and **58%** of the requests were either Cancelled by the drivers or there were No Cars Available

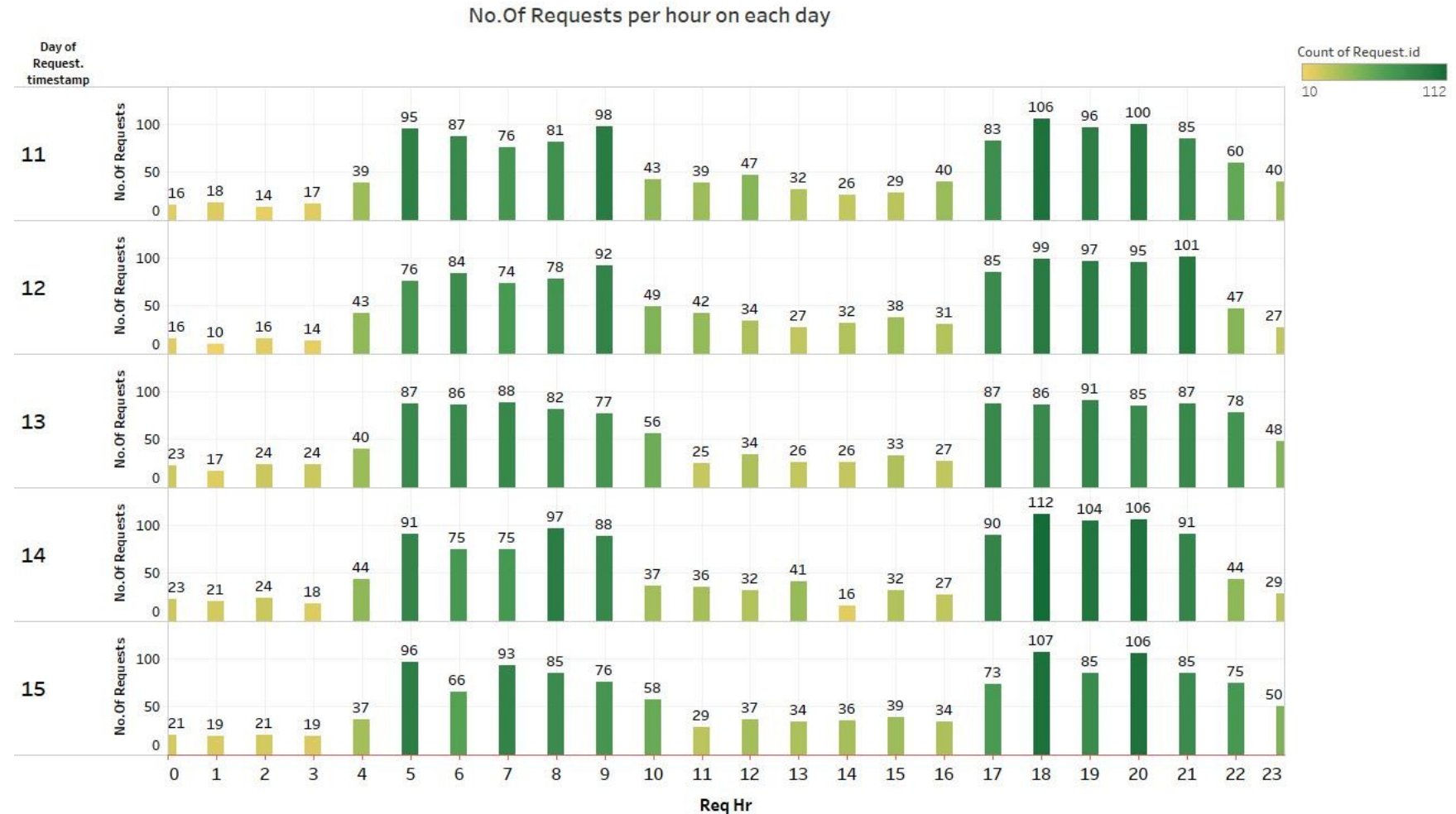


% of Total Count of Status for each Status. Color shows details about Status. The marks are labeled by % of Total Count of Status.

Univariate Analysis of Request time

❑ The overall trend for Cab requests on each day at every hour looks same.

❑ There is high demand during **5AM - 9AM** and **5PM - 9PM** on Every day.



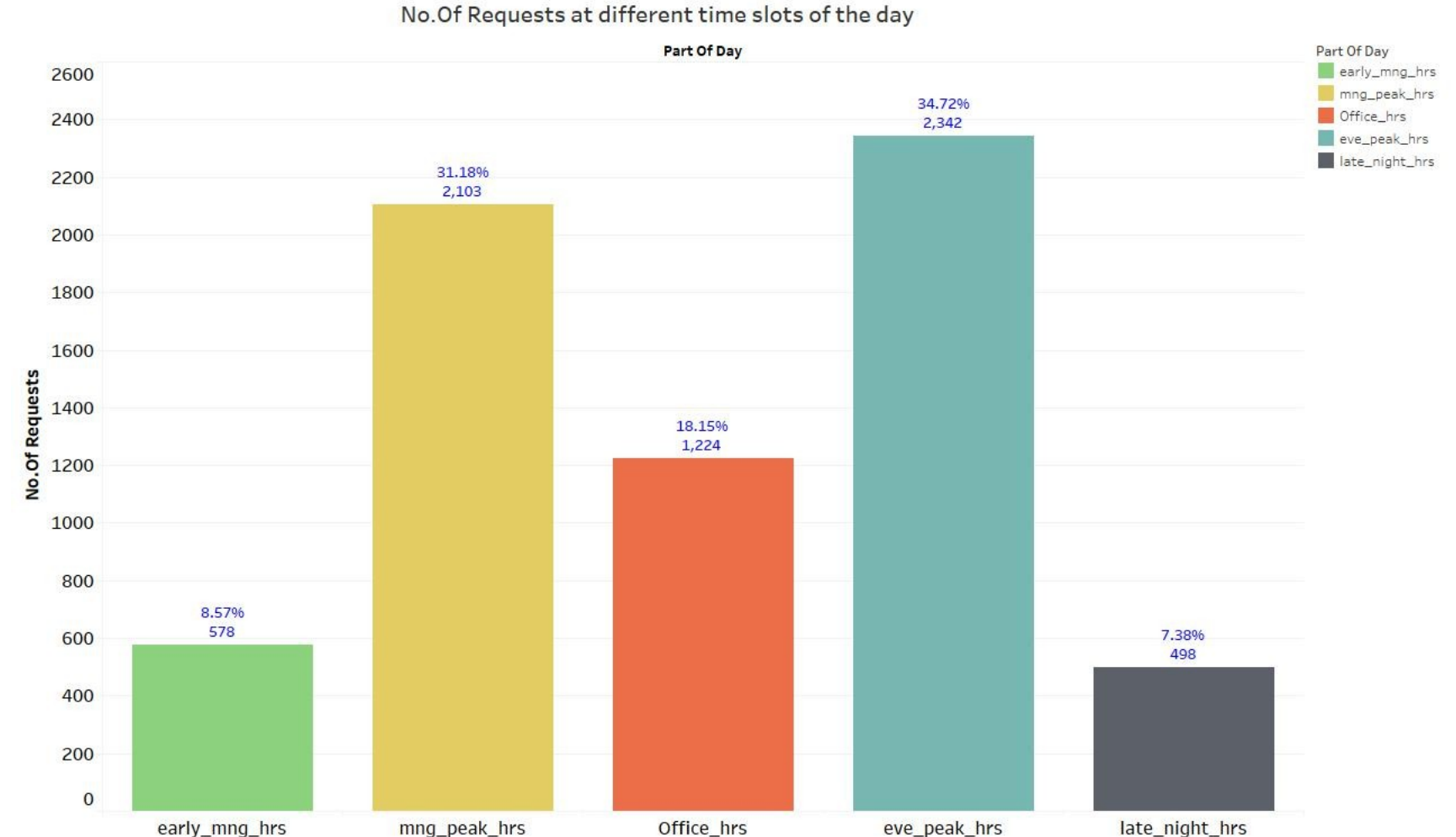
The plot of count of Request.id for Req Hr broken down by Request.timestamp Day. Color shows count of Request.id. The marks are labeled by count of Request.id.

Segmented Univariate Analysis of Request time

Request time is segmented into parts of the day.

Hours	Part_of_day
12AM to 4AM	early_mng_hrs
5AM to 9 AM	mng_peak_hrs
10AM to 4PM	Office_hrs
5PM to 9PM	eve_peak_hrs
10PM to 11PM	late_night_hrs

31% of the overall demand in a day is during mng_peak_hrs and **35%** during eve_peak_hrs.



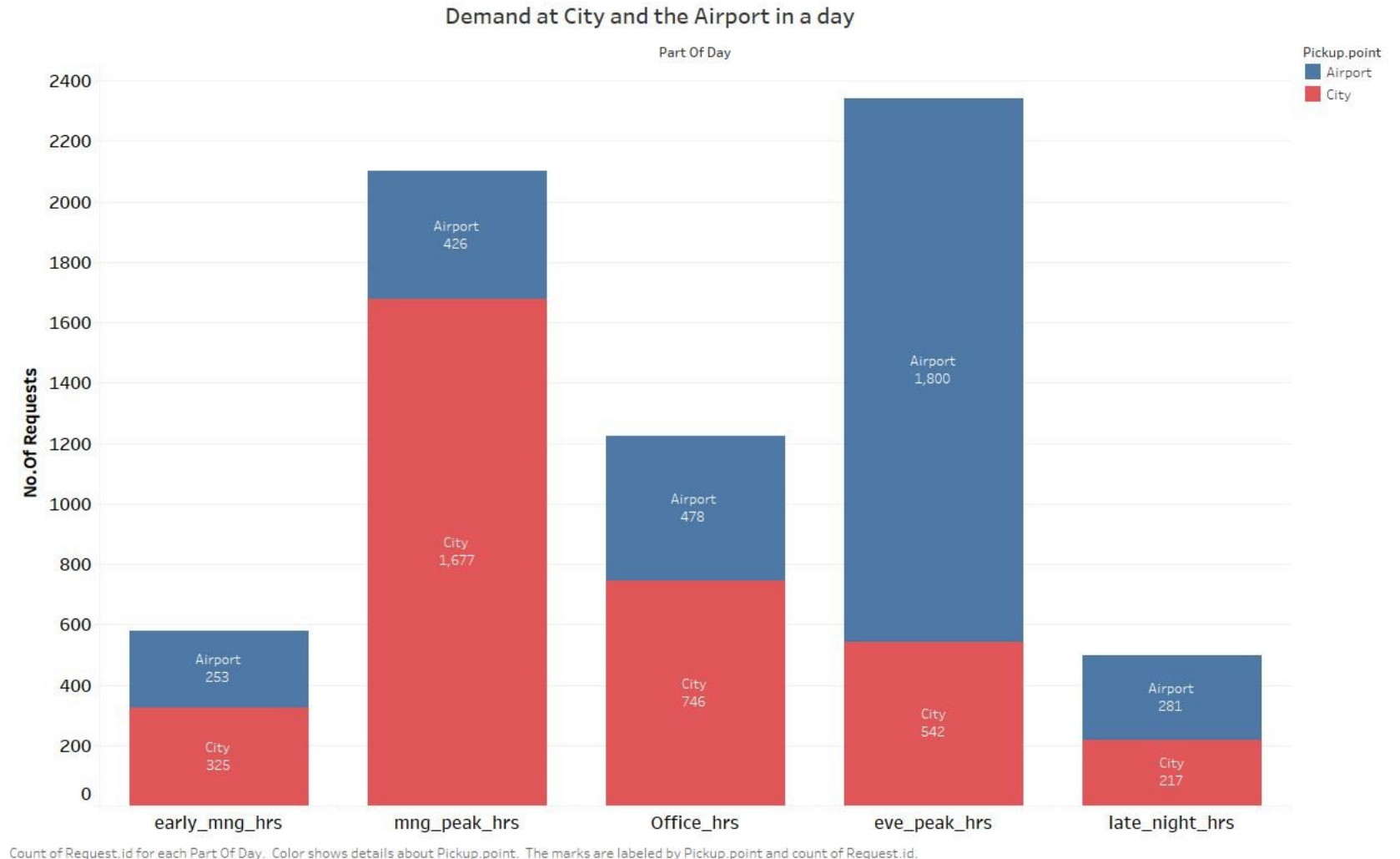
Count of Request.id for each Part Of Day. Color shows details about Part Of Day. The marks are labeled by % of Total Count of Request.id and count of Request.id.

Bivariate analysis to identify the demand at City and Airport in a day.

□ This graph gives us an idea that there is high demand for Cabs during morning peak hours from the **City** and high demand at **Airport** during the evening peak hours.

□ **80%** of the total requests during mng_peak_hrs are generated from the City.

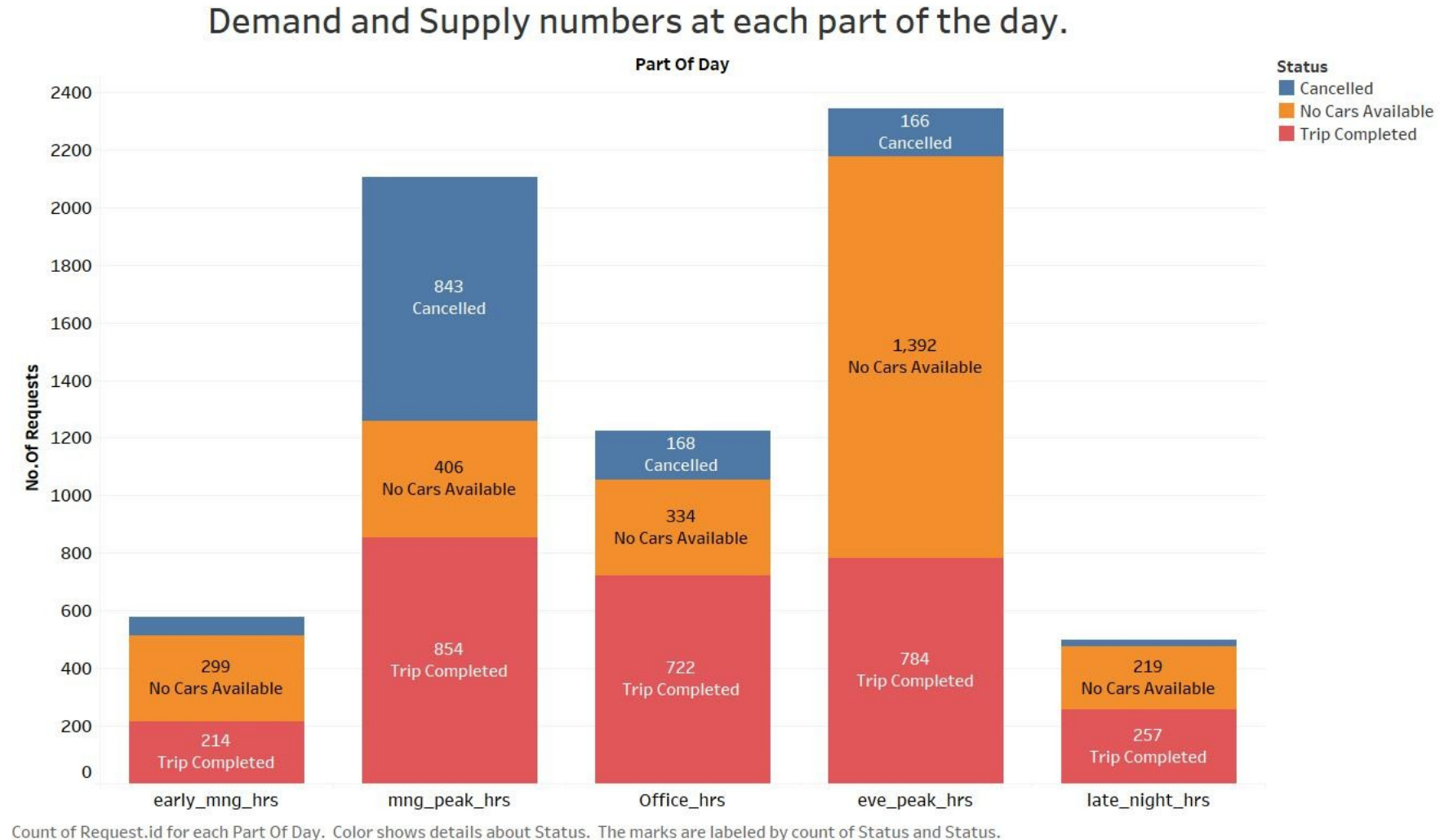
□ **76%** of the total requests during eve_peak_hrs are from Airport to city.



Bivariate analysis to identify Problematic time slot

❑ There is a huge gap in the supply and demand during mng_peak_hrs and eve_peak_hrs.

❑ **843** or **40%** of the mng_peak_hrs trips were **cancelled** by drivers and **1392** or **59%** of eve_peak_hrs trips were not fulfilled due to shortage of Cabs. These two time slots are definitely a big concern for Uber.

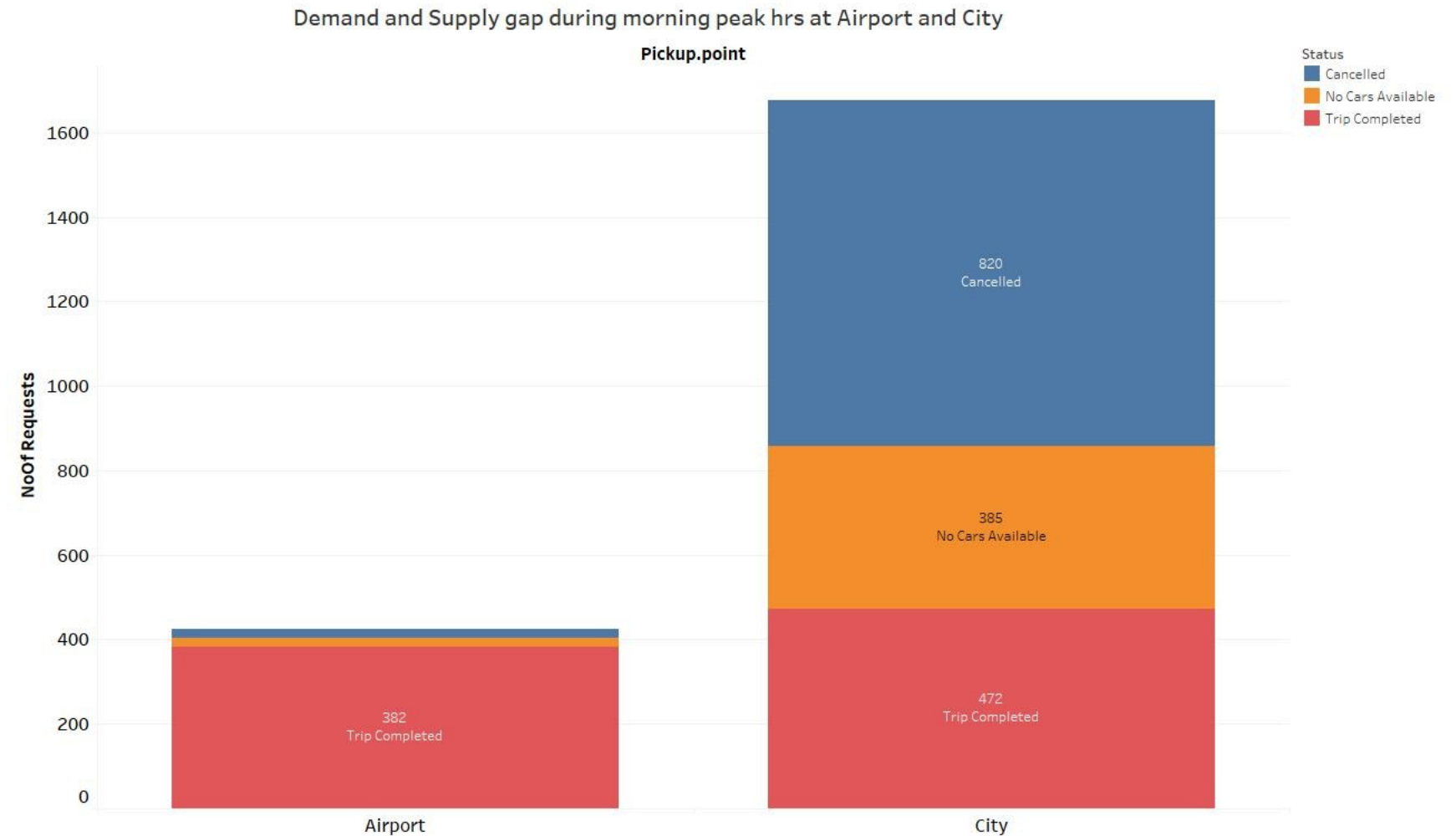


Bivariate analysis to identify problematic pickup point during mng_peak_hrs

❑ Subset the data for **Morning peak hours.**

❑ From the graph it is very clear that **49%** of the cab requests were **cancelled** by the drivers during Morning peak hours. Only 28% of the demand was supplied for the requests made at **City**. This is a pressing problem for Uber.

❑ **90%** of the cab requests from the **Airport** to City were fulfilled during this time slot.



Bivariate analysis to identify problematic pickup point during eve_peak_hrs

❑ Subset the data for **Evening peak hours**.

❑ From the graph it is very clear that **73%** of the cab requests were not supplied as there was no cars available. During Evening peak hours. Only 21% of the demand was supplied for the requests made at **Airport**. This is another problem spot for Uber.

❑ **90%** of the cab requests from the **Airport** to City were fulfilled.



Count of Request.id for each Pickup.point. Color shows details about Status. The marks are labeled by count of Status and Status. The data is filtered on Part Of Day, which keeps eve_peak_hrs.

Conclusion

- So, There are two major Problems for Uber

Problem 1:

- From the analysis it is clear that the demand is high at City and low at Airport during Morning peak hours. The inflow of flights might be less during this period which could constitute to this problem.
- Only 28% of the total demand is supplied and 49% of cab requests were cancelled by the drivers causing this wide gap between supply and demand.
- 23% of requests were not supplied as there were no cars available

Recommendation:

- Possible solution is to provide attractive incentives to the cab drivers for the trips that were made from the city to airport during morning peak hours. Ex: If the total number of trips during peak hours are over n number in a week/month, drivers would get x amount of money.
- Provide an option to the drivers to claim the fuel charges for the return trip, if the cab had to come back empty to City again.
- Nominal increase in price for the City to Airport rides during morning peak hours can add extra money to drivers wallet.
- Explore options to make more number of partner drivers to login during 5AM to 9AM, so that the number of cars available are high

Conclusion

Problem 2:

- 73% of the cab requests were not served due to shortage of Cabs during evening peak hours at the Airport. There could be more number of flights coming into airport and less going out could be a potential cause of this gap. Also the number of partner cab drivers available at the airport could be low after evening hours as they would return home causing this non availability of cars.

Recommendation:

- Provide discount prices for the customers who opt for car pooling during busy hours at Airport. This would reduce the total number of cars needed to meet the demand.
- Provide allowances for the partner drivers who take rides during the evening peak hours at the airport.
- Hire more number of in-house and partner driver cabs so that the demand is met during the peak hours.